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Women's epistemological development: Implications for undergraduate information literacy instruction

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Abstract

Over the past 30 years, researchers have asked how women learn and how they fit their learning into epistemological, or knowledge, structures. Yet no one has thoroughly related women's stages of knowledge to the Association of College and Research Libraries' (ACRL's) *Information Literacy Competency Standards for Higher Education*. This article surveys key models of intellectual development, particularly those that have investigated gender differences. It then asks how those woman-centered models might be used to re-read the ACRL's *Information Literacy Competency Standards for Higher Education* and suggests some possible instructional strategies to ensure that varying stages of development are taken into account. Finally, it suggests directions for further research.

1. Introduction

Over the past 30 years, a number of researchers have devoted themselves to the question of how women learn and how they fit their learning into epistemological, or knowledge, structures. Researchers have asked such specific questions as whether women solve math and science problems, learn computer programming, process verbal information, use listservs, and navigate virtual environments differently than men do (Ayersman & Reed, 1995–1996; Cutmore, Hine, Maberly, Langford, & Hawgood, 2000; Fulger, 1998; Kaplan & Farrell, 1994; Riding & Grimley, 1999; Rothschild, 1988). More broadly, researchers have proposed frameworks that trace women's overall intellectual development (Baxter Magolda, 1992; Belenky, Clinchy, Goldberger, & Tarule, 1986).

Case (2002) surveyed research on information seeking during the 1990s and noted that while gender has been analyzed as a variable, few studies appear to have had gender as a topic of the research, unless it has been in combination with a topic such as an illness like multiple sclerosis or a social problem like battering. One study that did focus on gender and information seeking crucial was Burdick's (1995). Starting with using her own "model", Kuhlthau's (1993) Information Search Process, she studied high school students, using "a model of nine Information Search Styles based on a level of focus (lost, tourists, and navigators) and kind of involvement (reluctant, detached, and involved)" that she had derived from an earlier smaller study (Burdick, 1996). In the 1995 study, she found approximately equal numbers of females and males among the more successful, confident searchers, whether they were detached navigators or involved navigators. Males, however, "tended to emphasize information collection and to detach themselves from their topics, females to be more reflective and to express more affect" (Burdick, 1995, p. xi).

Neely (2000) analyzed the variable of gender with regard to information literacy as a

whole. Her dissertation focused on undergraduate, masters, and doctoral level students' ability to judge the relevance of information to their information needs, an ability she suggested was based on a combination of the psychological and sociological factors of previous library instruction, faculty or advisor influence on research strategies, experience with library research tools and processes, and comfort with and ability to perform informed research. Citing studies by Morner (1993) and Morrison (1997), she noted that students surveyed in those studies described their evaluation skills as the information literacy skills in which they were most deficient. She found in her own study that women respondents scored only slightly higher than men in terms of prior instruction, comfort, relationship with faculty, and experience with library tools and processes, but scored significantly higher than men both in their acknowledgement of the importance of evaluating sources and in their ability to select appropriate criteria for evaluation. Unfortunately, Neely's study did not cross-tabulate gender with academic level, so it is impossible to tell whether women demonstrate higher levels of ability and confidence at higher academic levels. In general, however, Neely did find that undergraduates scored significantly higher than graduate students in terms of their comfort with information literacy concepts, even though their actual performance levels did not differ significantly.

Burdick (1995) studied high school students, rather than college-age students. Furthermore, her study focused more on construction of knowledge — topic formulation, information gathering, and the relationship between the two — without specific attention to information evaluation in terms of authority, currency, bias, and other criteria covered by the ACRL's recently approved *Information Literacy Competency Standards for Higher Education* (2000). Neely's (2000) analysis of women and information literacy played only a brief part in her overall analysis of student characteristics and their relationship to information literacy. No other researchers have investigated any more thoroughly than she the question of how undergraduate women use information in ways that would correspond to the *Information Literacy Competency Standards for Higher Education*. That is, do undergraduate women and men define their needs for information differently from one another? Do they structure their search strategies differently? Do they evaluate information differently? Do they apply the information they find to the information needs they define? If undergraduate information literacy instruction is to be effective, it should take students' intellectual development into account. For that picture to be complete, it should take both men and women into account.

2. Key models of intellectual development

Most important studies of women's intellectual development use Perry's (1970) research as a benchmark. Perry's scheme of nine positions and the transitions between them was based on observations of Harvard students, mostly male, conducted in the 1960s. Overall, Perry's subjects tended to move from "dualism," where they expected certain, absolute answers from authority figures, to "multiplicity," where no single overriding authority held sway. From multiplicity, subjects moved to "relativism," where they saw some answers as better than others depending on contextual support, and finally to "commitment," where they took responsibility for a lifelong series of judgments and choices.

In another landmark study, Gilligan (1982) described the difference in moral development between men and women, a distinction that subsequent researchers frequently cite in discussions of women's intellectual development. Gilligan agreed with Perry that both men and women evolve from a dependence on absolutes, but she saw the absolutes they evolve from

differently. The male absolute is “truth and fairness,” the female “not hurting others” (p. 166). Equally important to Gilligan’s model are the ideas of “separation” and “attachment” that distinguish masculine from feminine development, respectively (p. 156).

Kitchener (1983), later joined by King, developed the widely used “Reflective Judgment Model” of epistemic cognition “to account for the complex monitoring that is involved when older adolescents and adults are faced with ill-structured problems” (King & Kitchener, 2002, p. 37). “Ill-structured problems” are “problems [that] cannot be solved by the mechanical application of an algorithm; they require making judgments based on the strength of available evidence and the adequacy of argument” (p. 37). On the basis of their research, King and Kitchener described seven stages of knowledge and its acquisition, which they abbreviated into “prereflective,” “quasi-reflective,” and “reflective” reasoning (pp. 39–40), a progression that loosely corresponded to Perry’s. Their model is supported by 20 years of longitudinal and cross-sectional data acquired by them and others, mostly by using the Reflective Judgment Interview (RJI), which they developed. While the data acquired using the RJI so far tends not to support gender differences in reflective judgment, the authors point out that the instrument was not designed to test for such differences (King & Kitchener, 2002).

Belenky et al. (1986, p. 15) organized their model of women’s intellectual development around Perry’s scheme, but emphasized a progression from “silence” to “voice,” as women become independent yet still connected, empathetic thinkers. They used the categories “silence,” “received knowledge,” “subjective knowledge,” “procedural knowledge,” and “constructed knowledge” to describe five stages of development:

silence, a position in which women experience themselves as mindless and voiceless and subject to the whims of external authority; *received knowledge*, a perspective from which women conceive of themselves as capable of receiving, even reproducing, knowledge from the all-knowing external authorities but not capable of creating knowledge on their own; *subjective knowledge*, a perspective from which truth and knowledge are conceived of as personal, private, and subjectively known or intuited; *procedural knowledge*, a position in which women are invested in learning and applying objective procedures for obtaining and communicating knowledge; and constructed knowledge, a position in which women view all knowledge as contextual, experience themselves as creators of knowledge, and value both subjective and objective strategies for knowing (15).

Belenky et al. (1986) elaborated on Gilligan’s (1982) masculine/feminine distinction in their discussion of “separate” and “connected” knowing. “Separate knowing,” characteristically masculine, is more objective, distant, and evaluative than the more characteristically feminine “connected knowing.” “Connected knowing” is more concerned with trying to understand why others think as they do (p. 101).

From her study of Miami University students, Baxter Magolda (1992) derived the Epistemic Reflection Model, a model similar to Perry’s. Within the first three of her four stages, however, she found differing tendencies between the sexes as they move from reliance on dualistic answers through subjectivity to a more relativistic stance. She categorized knowers as “absolute,” “transitional,” “independent,” and “contextual” (pp. 36–69). Baxter Magolda described the female-related tendencies within absolute, transitional and independent knowers (“receiving,” “interpersonal,” and “interindividual,” respectively) as “relational.” She described the male-related tendencies within these three categories (“mastery,” “impersonal,” and

“individual,” respectively) as “abstract” (p. 72).

Since the publication of *Knowing and Reasoning in College* in 1992, Baxter Magolda has continued to interview her initial research subjects. She finds that this further research supports Perry but also believes that her model supports the “gender-related” (Baxter Magolda, 2002, p. 93) patterns of separation and connectedness suggested by Belenky et al. (1986).

3. Complicating factors

For all the significant research that these studies and others represent, Kuhn and Weinstock (2002, p. 121) point out, “Until very recently, the study of epistemological thinking has held more or less orphan status in the field of cognitive development.” Part of the problem, they suggest, is the difficulty of defining exactly what phenomenon researchers are examining, which in turn leads to difficulties in communication among researchers. Others have questioned whether discernible stages form a truly developmental scheme, or whether development occurs linearly across the lifespan or spirals recursively across several life stages. In an update to her work with Belenky et al. (1986), Clinchy (2002, p. 85) acknowledges that “I now believe that we should be wary of moving too quickly to embrace theories that postulate a single, acontextual linear direction in epistemological development. . . we need to examine development within rather than across domains,” for instance, in the humanities vs. the sciences. Finally, does all this speculation — even if grounded in hard data — really matter at all, at least to the learner (Chandler, Hallett, & Sokol, 2002)?

Pintrich (2002, p. 409) urges researchers “to move beyond surface-level characteristics such as biological sex. . . to examine the underlying psychological and cultural constructs that might generate differences in personal epistemologies.” He suggests that methods of data-gathering — qualitative vs. quantitative — may account for differences in the results of studies designed to examine gender differences. Qualitative research, he points out, has tended to uncover gender-related differences, while quantitative research has tended to uncover few differences. He further suggests that research into gender patterns may be particularly difficult to accomplish because gender (as well as other social constructs such as ethnicity and socioeconomic class) are so difficult to separate from a subject’s overall worldview and, in turn, epistemology.

All the studies of women’s intellectual development summarized here carefully point out that not everyone passes through all stages, nor do they progress at the same rate. Furthermore, the stages are not exclusively limited to men or women but rather are only useful for describing tendencies in order to paint a more complete picture of human development than earlier, more male-oriented schemes. The age of the research subjects further complicates any discussion. “College age” no longer necessarily denotes a traditional 18–22-year-old age group but extends much further into adulthood, where employment, marriage, childbearing and childrearing, and other experiences inevitably color academic experience. In fact, some researchers are finding evidence of epistemic thinking in children as young as age 3 or 4.

In spite of these complicating factors, however, most studies agree that students in their earlier college years tend to fall into more dualistic thinking, while most do not reach the stage of more independent, self-confident thinking until at least their senior year or later. Throughout the stages, women tend to lean more towards connected knowing. What then are the implications for information literacy instruction and where should research in this area go next?

4. Woman-centered information literacy instruction

One of the important implications of his scheme, writes Perry (1970, p. 210), is that it “may be of immediate solace to a teacher in that it explains on impersonal grounds how he can be so differently perceived by various students in his class.” Ironically, Perry continues, this realization can also “free” (p. 210) the instructor to meet students at their own levels of development. Librarians teaching traditional freshman 50-minute orientation sessions, teaching one-shot course-integrated instruction, teaching for-credit courses, or even those lucky enough to be designing 4-year sequences of information literacy instruction for majors may see such freedom as just one more complication. How can familiarity with women’s intellectual development be woven into an already complicated matrix of information literacy standards, outcomes, and performance indicators?

Peruse the ACRL *Information Literacy Competency Standards for Higher Education* (2000) and their performance indicators and outcomes, and one will find words and phrases that denote thinking skills that run the gamut from traditionally lower level tasks such as “identifies,” “uses,” “knows how,” “differentiates between,” to higher level tasks such as “constructs,” “creates,” “assesses,” “analyzes,” “evaluates,” “synthesizes,” and “integrates.” Certain words in the standards take on less traditional meanings, however, in the context of women learners. For instance, while “defines” and “articulates” rank as relatively low-level skills in cognitive taxonomies such as Bloom’s, they can be significant stumbling blocks for women at Belenky et al.’s “silent,” “absolute,” or even “procedural” knowing stages. Standard 1: “The information literate student determines the nature and extent of the information needed” (*Information Literacy Competency Standards for Higher Education*, 2002, p. 8) seems a basic competency that must precede the other four. A relatively early-stage woman learner, however, may not be able to internalize fully one of its performance indicators — “Recognizes that existing information can be combined with original thought, experimentation, and/or analysis to produce new information” (*Information Literacy Competency Standards for Higher Education*, 2002, p. 8) — until much later in her college career.

Re-reading the five standards and their many outcomes and performance indicators in the light of frameworks of women’s intellectual development should be a necessary first step in the development of new instructional and assessment strategies.

One example of such a strategy might be to include frequent opportunities for dialogue between same-sex pairs of students who tend to cluster near the “silent” end of the developmental spectrum in less advanced classes. Such conversations should help these students become more confident about expressing their own opinions and begin to develop a sense of their own “voice,” a precursor to more advanced information literacy activities. If carefully guided by a series of questions from the instructor, inter-student discussion will begin to reveal in an unthreatening way information that students lack. Because women at earlier stages of intellectual development are more confident about expressing themselves about personal experience, questions should be designed to bring into these dialogues personal experience that relates to the class content area.

One strategy for accomplishing this within a one-session introductory information literacy class would be to divide the class into pairs or small groups and ask them to devise a simple database with which to organize information of their own choosing, for instance, spring break destinations, movies, or local restaurants. Then they can create simple databases that relate to the content of the course, for instance, forms of exercise for a health class. This exercise will

help students become familiar with the concepts of records, fields, and data, which the librarian then can help them transfer to learning how to use library databases.

Unlike silent women, who virtually cannot hear at all because they are so intimidated by voices of authority, those at more dualistic stages — Belenky et al.'s (1986) "received knowers" and Baxter Magolda's (1992) "absolute knowers" — hear only others' voices to the exclusion of their own. According to Belenky et al., students "feel confused and incapable when the teacher requires that they do original work" (p. 38) because they are looking for absolute answers to be delivered from the professor's podium on high. On the other hand, they note, this also is a stage at which women enjoy finding out how much they have in common with each other, a necessary stage that will form the basis for later, more powerful stages of knowing. This stage may not be a fertile stage for introducing the critical thinking necessary for true information literacy, for instance, evaluating information. It does not, however, preclude basic search strategy instruction. Highly structured assignments that guarantee a high degree of success will help students gain further confidence. Yet, because students are in danger of becoming entrenched at this stage if not pushed gently to leave the nest (Belenky et al., 1986, p. 40) different sections of the class could be steered in different directions so that the question of what to do with conflicting information can begin to be addressed.

Belenky et al. (1986, p. 47) suggest that "being thrust into roles of responsibility for others helps erode the belief that [women] are dependent on 'them' for 'truth.' For these women, it is the act of giving rather than receiving that leads them to a greater sense of their capacity for knowing." Providing group learning opportunities and making sure that women hold leadership roles within the groups is an important strategy for information literacy programs at this stage of "received knowing." Because authority figures — in this case, even librarians — are such powerful voices at this stage, it is especially important to validate women's contributions to class discussions and other activities.

Furthermore, women at this stage may have particular trouble with adapting to new technology (Belenky et al., 1986). Therefore, for less technologically skilled learners this is an appropriate stage for working on such information technology competencies as navigating browser screens, downloading information, using e-mail and listservs, and using simple database interfaces. Students invariably will enjoy various levels of technical competency, so these skills might benefit from delivery through online tutorial modules or from dividing the class into sections.

Belenky et al.'s (1986) "subjective knowers" and Baxter Magolda's (1992) "transitional knowers" still find themselves seeking "right" or "wrong" answers, but at this stage the student has become the source of the answers rather than the all-knowing professor and, by extension, the outside world. Belenky et al. (p. 54) consider this "an important adaptive move in the service of self-protection, self-assertion, and self-definition," even though it relies almost entirely on intuition, a traditionally feminine characteristic. At this stage, it may be difficult to convince students of the relevance of nonintuitive information, although that is that is the stuff of OPACs, periodical databases, and search engines, the librarian's stock-in-trade. One may be tempted to push students to defend their opinions with hard information at this stage, a kind of debate with which men tend to feel more comfortable but which tends to silence women just when they are beginning to feel a small sense of their own voice. Now, Belenky et al. (p. 70) point out, the search for knowledge is "magical and mysterious," neither logical nor planned. This implies that students at this stage try to find information that matches what they already believe. They likely will wave aside information that clashes with those beliefs and preconceptions.

On the other hand, observation and listening become increasingly important to women learners at this stage (Belenky et al., 1986). Research instruction that encourages students to listen to the ongoing scholarly conversation that published research represents may be one way to mitigate close-minded tendencies and begin to nudge students towards thinking that is both independent and based on thoughtful consideration of outside information, thus joining the conversation as life-long learners. For instance, research journals or logs may prove useful. Learning tasks that involve self-assessment, as well as instructor assessment, also give students a sense of their own power.

When women are gently encouraged to justify their opinions, they move to the “procedural knowing” stage (Belenky et al., 1986) and see the instructor’s job as teaching them to use “procedures” (p. 92), for instance of literary analysis, to defend their positions rather than merely relying on their gut instincts. At the ultimate “constructed knowing” stage, women learn to integrate external information with their internal intuitions. Clearly, these are much more opportune times for developing more advanced information literacy competencies, although both Belenky et al. (1986) and Baxter Magolda (1992) find these more advanced stages occurring fairly late in the college career, and sometimes not until afterwards, depending on students’ socioeconomic backgrounds. Earlier within these stages, women can be helped to use standard rubrics to evaluate information. Later, they can develop rubrics of their own more suited to the particular information need at hand. They also can learn to consider various ways of applying the information they have found to their information need and to evaluate the whole search process recursively to see what information they are still lacking.

At the procedural knowledge stage, Belenky et al.’s (1986) distinction between “separate” and “connected” knowing becomes more obvious than before. They find that while women can construct arguments, they do not particularly like doing so because they take arguments more personally than men do. These researchers’ classroom experience has shown them that they need both to ask men to withhold judgment and to encourage women to make judgments at this stage. They also recommend long-term learning groups so that connected knowers can develop trust in each other’s criticism. Such trust is not as critical to separate knowers, who value argument over the connected knower’s need for exploration.

While conceding that, even over a whole quarter or semester, it is difficult to develop such ideal long-term groups, in a study of adult women learners Tisdell (2000, p. 176) suggests that “the interweaving of activities through a course that get at the sharing of relevant life experience (where aspects of the participants’ positionality [with regard to such factors as race, class, and sexual orientation] will inevitably come up) can contribute to group bonding and group understanding.” Perry (1970, p. 213), too, suggests that encouraging a sense of “community” among learners may be the most important influence in helping students move into the stage of commitment. Therefore, cooperative learning techniques used in earlier information literacy classes and continuing affirmation by librarians and other faculty will prove useful throughout postsecondary education in allowing women students to bond with each other in their search for and use of information.

Summing up the implications of their findings for classroom practice, Belenky et al. (1986, p. 229) conclude:

Educators can help women develop their own authentic voices if they emphasize connection over separation, understanding and acceptance over assessment, and collaboration over debate; if they accord respect to and allow time for the knowledge that

emerges from firsthand experience; if instead of imposing their own expectations and arbitrary requirements, they encourage students to evolve their own patterns of work based on the problems they are pursuing.

In terms of information literacy instruction, librarians should focus on “connection,” “collaboration,” and “firsthand experience.” Recognizing that women rely on connection with others in order to develop confidence in their own intellectual abilities, librarians should design activities that encourage women to work collaboratively, particularly activities that encourage development of leadership skills. They should be allowed time to gather as much information as they need in order to feel confident in their judgments and be encouraged to test that information against their own firsthand experience. This should result not only in distinctively woman-centered information literacy instruction but more well-rounded information literacy instruction for all students.

Attention to women’s epistemological development can benefit both women and men students. None of the developmental theorists summarized claim that the patterns of development described are exclusive to either sex, particularly because the construct of gender is so complicated by social and economic factors. Instead, developmental patterns are just that — patterns, which only tend to describe one sex to a greater degree than the other. It is entirely likely that students of one sex share characteristics of the other, that is, a combination of feminine learning tendencies and masculine learning tendencies; just as learners share a variety of learning styles, for instance, kinesthetic and visual. No one would suggest, however, that recognizing that some learners are predominantly kinesthetic or visual learners requires instructors to make every learning opportunity both kinesthetic and visual. Similarly, no one would suggest that every information literacy opportunity must equally address masculine and feminine needs. Nevertheless, acknowledging that some learners work better collaboratively or develop confidence through connection rather than argument can only bring a richer learning environment to all students.

5. Future directions for research

Because of the lack of research performed to date on women and information literacy, this discussion must raise as many questions as it answers. It points to the need for longitudinal qualitative and quantitative research into whether a woman-centered developmental framework can be described for information literacy. Some measures for qualitative research, such as the Reflective Judgment Inventory (RJI), might be built upon, although qualitative research is labor-intensive, expensive, and thus often results in a relatively small sample. To date, researchers still are trying to produce effective quantitative measures that can be administered more cheaply to larger samples of subjects. Furthermore, research should take into account variables such as student age, work experience, socio-economic level, content area, prior experience with information technology, and the effects of elementary and secondary educational instruction on the college experience. Because methods of assessment chosen by instructors can both help and hinder learning, research comparing different assessment methods is necessary. Finally, various information literacy standards, outcomes, and performance indicators should be permuted with instructional and assessment strategies for women at different stages of intellectual development in order to begin to devise effective information literacy curricula that span the undergraduate curriculum. Only then can librarians begin to feel confident that they are meeting the needs of all

students.

Recent research by educational psychologists into the existence of and nature of patterns of epistemic development may leave many questions unanswered. Hofer (2002, pp. 3–4), however, brings the problem down to earth and clarifies its relevance to information literacy:

As citizens, we are called on to judge competing claims from officials and politicians, to weigh evidence, and to make decisions about issues of importance to ourselves and our communities. . . . [T]he adequacy of our epistemological theories will in some way determine what and how we make meaning of the information we encounter. As both the amount and the availability of information increase, and as the tools of access change rapidly, we need a better understanding of personal epistemology and its relation to learning.

Testing new instructional strategies for developing information literacy in women students is an important contribution that librarians can make to this understanding.

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